Name: Abby Simons Date: 7/6/10

Lesson Title: Word Problems Unit Title: Week 3

Grade Level: 7th

Objectives:

* Students will be able to solve word problems involving all the integer operations (addition, subtraction, multiplication, and division)
* Students will be able to write their own word problems that involve all the integer operations
* Students will be able to describe the importance of the ancient Chinese mathematicians and their inventions

Set Induction:

* Take attendance
* Hand back any papers
* Students will take out their homework logs and fill in tonight’s homework. I will come around and sign it.
* Ask students what they know about the ancient Chinese and their inventions or any discoveries. Chinese mathematicians will be our mathematical topic of the week.
* (3 min)

Content Outline and Learning Activities:

* First, mathematical topic/mathematician of the week. Ancient Chinese Mathematicians
  + The ancient Chinese mathematicians – three golden ages in different dynasties..the Western and Eastern Han Dynasties; the Wei, Jin and the Northern and Southern Dynasties; the Song and Yuan Dynasties. Highest point of the development of mathematics in Song and Yuan Dynasties.
  + Dedicated to creating calculating methods, used these methods to solve equations. They called the advanced calculating methods “shu” or “art.”
  + A lot of ancient Chinese Mathematicians made contributions to the development of the world.
  + Mathematicians…
    - Zu Chongzhi – mathematician and astronomer. Approximated pi – 355/113 which is correct to 6 decimal places…
      * 355/113 = 3.14159292…
      * Pi = 3.141592654…
    - Liu Hui – great mathematician. His great works, The Nine Chapters on the Mathematical Art and The Sea Island Mathematical Manual very significant to mathematics in China
  + Mathematical Tool by ancient Chinese – abacus called suanpan which means “counting tray”
    - Usually 20 cm tall and comes in different widths, depending on its use.
    - Has 7 or more rods
    - Use beads on the rods for counting
    - Abacus can do multiplication, division, addition, subtraction, square root, and cube root operations
  + (5 min)
* Handback the word problem activity sheets from Thursday 7/1/10. Students who did not finish the worksheet will finish now. (5 min). students who have already finished the activity will go on the next set of word problems…(All operations word problems worksheet – see below)
* Students must be able to solve word problems with all of the operations we have discussed thus far… addition, subtraction, multiplication, and division
  + Hand out All Operations Word Problems
  + Students will complete and hand in to me when they are finished
  + (15 min)
* Introduce students to order of operations
  + Today we will only work with precedence on hierarchy in regard to multiplication, division, addition, and subtraction.
  + Rules for evaluating an expression when the expression has these operations. Do multiplication and division (whichever comes first from left to right) then do addition and subtraction (whichever comes first from left to right). There are other operations that you can perform on integers, but we will start off with expressions that only contain multiplication, division, subtraction, and addition and then move on to more complex problems.
  + Ask the students why they think there is an order of operations? … then explain to the students the reason why there is an order of operations. When you perform an arithmetic operation (multiplication, division, addition and subtraction), there can only be one correct answer. Mathematicians came up with a system that prevents confusion when calculating expressions with more than one operation.
  + Give example expressions when using the four operations
    - 3 + 2 \* 7 = 3 + 14 = 17 (write out using expression trees on board)
      * Show them incorrect answer as well… 5 \* 7 = 35
    - 18 / 2 – 3 = 9 – 3 = 6 (write out expression trees on board)
  + (3 min)
* Introduction to the order of operations game…
  + Have the students count 1, 2 into 2 teams. Team 1 will move to the right side of the classroom. Team 2 will move to the left side of the room.
  + Directions to tell students- they are given a sheet with 10 expressions on them using only multiplication, division, addition, and subtraction. They are to solve each expression and show all work underneath each problem. The game board gives them hints on some of the answers (not all of the numbers on there are all the answers to the questions, so be careful). Use the order we just talked about. Group to get the most right and to show all their supporting evidence will win a prize. MAKE SURE TO TELL THEM – work should be written out as expression trees. Uses number one as an example. Write out on board to model expression trees.
  + Put up the game board on the smartboard. (answers of expressions on a word document)
  + There will be 10 expressions. Team who gets the most questions right with **supporting work** will win. Prize – each student on the winning team will get a piece of candy from the candy bin in our classroom.
  + (12 min)

Closure:

* Ask students if they have heard of PEMDAS and what does it mean??
  + Parentheses, exponent, multiply or divide, add or subtract
* Hand out homework – introduction to the order of operations and more word problems practice due 7/7/10
* (2 min)

Evaluation Procedure:

* Introduction to the order of operations and more word problems practice due 7/7/10

Additional Notes:

* Word problem activity sheets from 7/1/10
* All operations word problems
* All operations word problems answers
* Order of operations expression sheets
* Order of operations expression answers
* Order to operations game board
* Prizes – candy bin
* Introduction to the order of operations and more word problems practice
* Introduction to the order of operations and more word problems practice answers

Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

All Operations Word Problems

Directions: Complete the following problems. **Make sure to show all work and write out your expressions. Label your answers.**

1. Ralph takes 30 minutes to grade his exams. He has 5 more tests to grade but has to meet his friends for dinner at 6:00 pm. If it is 4:00 pm now, will he be able to finish the tests in time in order to go out with his friends?
2. Paper Depot will be delivering 702 cases of paper to customers today. They will need 9 trucks to carry it all. How many cases of paper can each truck carry? If each truck delivers to 13 people, how many cases of paper do they each receive?
3. Ben went to Barnes and Nobles over the weekend and wanted to buy the Twilight Series. The previous week he worked for 10 hours, making a total of $100. Does Ben have enough money to buy each of the 4 books in the Twilight Series that cost $15? If he does, how much money does he have left over?
4. Mary went swimming in the pool over the weekend. She swam a total of 20 laps. If each lap is equal to 13 yards, how many total yards did Mary swim?
5. Last season the Eagles played against the Giants. The Eagles scored 30 points. If they scored 3 touchdowns how many field goals did they have to score to get 30 points? If the Giants scored 2 touchdowns, how much did the Eagles win by?

Note: Touchdown = 7 points; field goal = 3 points

Name: ANSWERS

Date: 7/6/10

All Operations Word Problems

Directions: Complete the following problems. **Make sure to show all work and write out your expressions. Label your answers.**

1. Ralph takes 30 minutes to grade his exams. He has 5 more tests to grade but has to meet his friends for dinner at 6:00 pm. If it is 4:00 pm now, will he be able to finish the tests in time in order to go out with his friends?

5 \* 30 = 150 = 2 hours and 30 min. No he will not be able to finish in time to go out with friends. He will be done grading at 6:30 pm.

1. Paper Depot will be delivering 702 cases of paper to customers today. They will need 9 trucks to carry it all. How many cases of paper can each truck carry? If each truck delivers to 13 people, how many cases of paper do they each receive?

702 / 9 = 78 cases each truck can carry. 78 cases / 13 people = 6 cases per person

1. Ben went to Barnes and Nobles over the weekend and wanted to buy the Twilight Series. The previous week he worked for 10 hours, making a total of $100. Does Ben have enough money to buy each of the 4 books in the Twilight Series that cost $15? If he does, how much money does he have left over?

4 \* $15 = $60, so yes he has enough to buy the 4 books. $100 - $60 = $40 left over.

1. Mary went swimming in the pool over the weekend. She swam a total of 20 laps. If each lap is equal to 13 yards, how many total yards did Mary swim?

20 \* 13 = 260. Mary swam 260 yards.

1. Last season the Eagles played against the Giants. The Eagles scored 30 points. If they scored 3 touchdowns how many field goals did they have to score to get 30 points? If the Giants scored 2 touchdowns, how much did the Eagles win by?

Note: Touchdown = 7 points; field goal = 3 points

Eagles… 3 \* 7 = 21. 30 – 21 = 9. 9 / 3 = 3 field goals to score 30 points.

Giants… 2 \* 7 = 14 points.

30 – 14 = 16. The Eagles won by 16 points.

Order of Operations Game

Expressions and Answers

1. 3 \* 3 + 5 = 14
2. 8 ÷ 2 – 6 = -2
3. 9 + 2 = 11
4. 6 + 3 \* 8 = 30
5. 5 + 10 ÷ 2 = 10
6. 13 – 2 + 4 = 15
7. 12 ÷ 2 \* 3 = 18
8. 15 ÷ 5 – 6 = -3
9. 9 \* 5 = 45
10. 10 – 2 + 8 = 16

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Order of Operations Game

Directions: Show all work as expression trees.

1. 3 \* 3 + 5 =
2. 8 ÷ 2 – 6 =
3. 9 + 2 =
4. 6 + 3 \* 8 =
5. 5 + 10 ÷ 2 =
6. 13 – 2 + 4 =
7. 12 ÷ 2 \* 3 =
8. 15 ÷ 5 – 6 =
9. 9 \* 5 =
10. 10 – 2 + 8 =

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Due Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Introduction to the order of operations and more word problem practice

Directions: Solve the following expressions. Use the order of operations. Show all work using the expression trees that we talked about in class.

1. 5 \* 8 – 3 + 5 =
2. 18 ÷ 2 \* 6 =

1. 6 \* 5 + 6 ÷ 2 =
2. 24 ÷ 4 + 13 =

1. 15 \* 2 – 8 + 13 =

Directions: Solve the following word problems. SHOW ALL WORK. Write out numerical expressions and solve.

1. Ben went to Barnes and Nobles over the weekend and wanted to buy the Twilight Series. The previous week he worked for 10 hours, making a total of $100. Does Ben have enough money to buy each of the 4 books in the Twilight Series that cost $15? If he does, how much money does he have left over?
2. Mary went swimming in the pool over the weekend. She swam a total of 20 laps. If each lap is equal to 13 yards, how many total yards did Mary swim?
3. Sue ran 15 miles through a park one afternoon. If she ran each mile at 8 minutes and 30 seconds, how long did it take her to run the 15 miles?
4. Janelle earns $12 every 2 hours. If she worked 4 hours on Friday, 3 hours on Saturday, and 5 hours on Sunday, how much money did she make over the weekend? (hint: first find out how much she makes for one hour of work)

Name: ANSWER KEY

Due Date: 7/7/10

Introduction to the order of operations and more word problem practice

Directions: Solve the following expressions. Use the order of operations. Show all work using the expression trees that we talked about in class.

1. 5 \* 8 – 3 + 5 =

40 – 3 + 5 = 37 + 5 = 42

1. 18 ÷ 2 \* 6 =

9 \* 6 = 54

1. 6 \* 5 + 6 ÷ 2 =

30 + 3 = 33

1. 24 ÷ 4 + 13 =

6 + 13 = 19

1. 15 \* 2 – 8 + 13 =

30 – 8 + 13 = 22 + 13 = 35

Directions: Solve the following word problems. SHOW ALL WORK. Write out numerical expressions and solve.

1. Ben went to Barnes and Nobles over the weekend and wanted to buy the Twilight Series. The previous week he worked for 10 hours, making a total of $100. Does Ben have enough money to buy each of the 4 books in the Twilight Series that cost $15? If he does, how much money does he have left over?

4 \* 15 = $60. Yes he has enough to buy the four books. Left over…$100 - $60 = $40 left

1. Mary went swimming in the pool over the weekend. She swam a total of 20 laps. If each lap is equal to 13 yards, how many total yards did Mary swim?

13 \* 20 = 260 yards

1. Sue ran 15 miles through a park one afternoon. If she ran each mile at 8 minutes, how long did it take her to run the 15 miles?

8 \* 15 = 120 = 2 hours

1. Janelle earns $12 every 2 hours. If she worked 4 hours on Friday, 3 hours on Saturday, and 5 hours on Sunday, how much money did she make over the weekend? (hint: first find out how much she makes for one hour of work)

Each hour earns $12 / 2 = $6. 4 \* $6 + 3 \* $6 + 5 \* $6 = $72. She made $72 over the weekend.

Game Board

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 14 | 72 | 24 | 10 | 33 |
| 45 | 5 | 15 | 18 | -3 |
| 16 | 7 | 11 | 96 | 14 |
| -15 | 5 | 2 | 7.5 | 25 |
| -2 | 36 | 17 | 0 | -1 |

Name: Abby Simons Date: 7/7/10

Lesson Title: Order of Operations Unit Title: Week 3

Grade Level: 7th

Objectives:

* The students will be able to recall the order of operations
* The students will be able to compute expressions using the order of operations and PEMDAS

Set Induction:

* Take attendance
* Hand back any papers
* Have the students take out their homework logs and fill in their homework for tonight
* Put the expression on the board… 8 + 3 \* 5… which operation do you do first? (multiply 3 by 5, then add 8)… the expressions we did yesterday in class and the ones for homework only had the arithmetic operations of multiplication, division, addition, and subtraction. Today we will learn how to calculate other expressions with other operations.
* (3 min)

Content Outline and Learning Activities:

* Go over homework from last night - Introduction to the order of operations and more word problems practice. Collect homework when finished. (8 min)
* Handout order of operations notes for the students to fill out while I am going over the notes
  + Answer sheet has notes on it.
  + (15 min)
* Now students will complete order of operations worksheet using PEMDAS. Practicing PEMDAS.
  + Have them draw out expression trees like they did yesterday. Students will work together to do pieces of the problems (tag-teaming). Call up one student to start, then pass to another, etc until expression solved. Each student is doing a different piece from the order of operations. When another student is explaining they must be paying attention and writing down the explanation.
  + 10 problems on worksheet. I will model the first one for the class.
  + (15 min)

Closure:

* Ask students what the order of operations is. PEMDAS! (correct way of evaluating expressions with multiple operations..parentheses, exponents, multiply/divide, add/subtract)
* Hand out PEMDAS homework and construction paper (tell them to use the construction paper to publish their phrase or acronym) due 7/8/10
* (4 min)

Evaluation Procedure:

* PEMDAS homework due 7/8/10

Additional Notes:

* Introduction to the order of operations and more word problem practice answers (hw due today)
* Order of Operations Notes
* Order of Operations Notes Answers
* Practicing PEMDAS
* Practicing PEMDAS answers
* PEMDAS homework and CONSTRUCTION PAPER
* PEMDAS homework answers

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Order of Operations Notes

Part 1:

When should I use the order of operations?

The order of operations…

First, perform the calculations that are in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Second, calculate all \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Then, perform all multiplication and division, working from \_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_

Finally, perform all \_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_, working from left to right

The order of operations is also known as PEMDAS. This stands for:

P = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

M = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

D = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

A = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

S = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Note: Memorize the phrase “Please Excuse My Dear Aunt Sally” to remember PEMDAS!

Part 2:

What is an exponent?

Base = the number that is being multiplied by itself

Power or exponent = tells you how many times to multiply the base by itself

Examples of Exponents:

1. 22
   1. Base = \_\_\_\_\_\_\_
   2. Exponent or power = \_\_\_\_\_\_
   3. 22 = \_\_\_ \* \_\_\_ = \_\_\_\_
2. 23
   1. Base = \_\_\_\_\_\_\_
   2. Exponent or power = \_\_\_\_\_
   3. 23 = \_\_\_ \* \_\_\_ \* \_\_\_ = \_\_\_\_
3. 42
   1. Base = \_\_\_\_\_
   2. Exponent or power = \_\_\_\_\_
   3. 42 = \_\_\_ \* \_\_\_ = \_\_\_\_

Find the following values on your own:

1. 53 = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ = \_\_\_\_\_\_
2. 34 = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ = \_\_\_\_\_\_
3. 92 = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ = \_\_\_\_\_\_\_

Name: Answers

Date: 7/7/10

Order of Operations Notes

Part 1:

When should I use the order of operations?

You should use the order of operations when an expression has more than one type of operation. For example, you would need to use the order of operations for an expression with multiplication and subtraction in it.

The order of operations…

First, perform the calculations that are in \_\_\_\_parentheses\_\_\_\_

Second, calculate all \_\_\_\_\_\_exponents\_\_\_\_\_\_

Then, perform all multiplication and division, working from \_\_left\_\_ to \_\_right\_\_

* + - Whichever comes first from left to right

Finally, perform all \_\_addition\_\_ and \_\_subtraction\_\_, working from left to right

* + - Whichever comes first from left to right

The order of operations is also known as PEMDAS. This stands for:

P = parentheses

E = exponents

M = multiplication

D = division

A = addition

S = subtraction

Note: Memorize the phrase “Please Excuse My Dear Aunt Sally” to remember PEMDAS!

Part 2:

What is an exponent?

Another way to write out multiplication. Tells you how many times to multiply a number by itself. Exponents, or powers, are the number of times you multiply a base number by itself. All they need to know is that if you have a number raised to a power, it means to multiply the number by itself that many times.

Base = the number that is being multiplied by itself

Power or exponent = tells you how many times to multiply the base by itself

Examples of Exponents:

1. 22
   1. Base = \_\_2\_\_
   2. Exponent or power = \_\_2\_\_
   3. 22 = \_2\_ \* \_2\_ = \_\_4\_\_
2. 23
   1. Base = \_\_\_2\_\_\_
   2. Exponent or power = \_\_3\_\_
   3. 23 = \_2\_ \* \_2\_ \* \_2\_ = \_\_8\_\_
3. 42
   1. Base = \_\_4\_\_
   2. Exponent or power = \_\_2\_\_
   3. 42 = \_4\_ \* \_4\_ = \_\_16\_\_

Find the following values on your own:

1. 53 = 5 \* 5 \* 5 = 125
2. 34 = 3 \* 3 \* 3 \* 3 = 81
3. 92 = 9 \* 9 = 81

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Practicing PEMDAS

Directions: Solve the following expressions using PEMDAS. Show your work.

1. 10 ÷ (3 + 2) =
2. 53 + 6 =
3. 4 \* 22 =
4. 7 + (6 + 4) \* 2 =
5. (32 + 4) \* 3 =
6. 42 – 30 ÷ 2 =
7. 14 + (3 – 7) =
8. 5 + (6 + 3) \* 2 =
9. 5 \* (2 + 3) – 7 =
10. (7 + 3) ÷ 2 =

Name: Answer Key

Date: 6/29/10

Practicing PEMDAS

Directions: Solve the following expressions using PEMDAS. Show your work.

1. 10 ÷ (3 + 2) = 10 ÷ 5 = 2
2. 53 + 6 = 125 + 6 = 131
3. 4 \* 22 = 4 \* 4 = 16
4. 7 + (6 + 4) \* 2 = 7 + 10 \* 2 = 27
5. (32 + 4) \* 3 = (9 + 4) \* 3 = 13 \* 3 = 39
6. 42 – 30 ÷ 2 = 16 – 15 = 1
7. 14 + (3 – 7) = 14 + (-4) = 10
8. 5 + (6 + 3) \* 2 = 5 + 9 \* 2 = 23
9. 5 \* (2 + 3) – 7 = 5 \* 5 – 7 = 25 – 7 = 18
10. (7 + 3) ÷ 2 = 10 ÷ 2 = 5

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Due Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

PEMDAS Homework

1. Create your own phrase or acronym to remember the order of operations, PEMDAS. (the example from class today was “Please Excuse My Dear Aunt Sally”). Be prepared to present your phrase or acronym in class tomorrow. **Use the construction paper to publish your phrase or acronym. Be creative and school appropriate.**

Use this space to plan your ideas.

1. Evaluate the following expressions using the order of operations. SHOW ALL WORK.
   1. (24 – 8) ÷ 4 =
   2. 11 \* (4 – 2) + 16 =
   3. 20 ÷ 2 + 8 \* 2 =
   4. (7 \* 3) – (4 \* 2) =

Name: Answer Key

Due Date: 6/30/10

PEMDAS Homework

1. Create your own phrase or acronym to remember the order of operations, PEMDAS. (the example from class today was “Please Excuse My Dear Aunt Sally”). Be prepared to present your phrase or acronym in class tomorrow. Please be creative and school appropriate.

Students will present in class tm!!!

1. Evaluate the following expressions using the order of operations. SHOW ALL WORK.
   1. (24 – 8) ÷ 4 = 16 ÷ 4 = 4
   2. 11 \* (4 – 2) + 16 =11 \* 2 + 16 = 22 + 16 = 38
   3. 20 ÷ 2 + 8 \* 2 = 10 + 16 = 26
   4. (7 \* 3) – (4 \* 2) = 21 – 8 = 13

Name: Abby Simons Date: 7/8/10

Lesson Title: Order of Operations Continued Unit Title: Week 3

Grade Level: 7th

Objectives:

* Students will be able to compute expressions using the order of operations and PEMDAS
* Students will be able to write their own word problems using all operations; they will use multiplication, division, addition, subtraction, exponents.
* Students will be able to assess groups of numbers by finding the mean, median, and mode.

Set Induction:

* Take attendance
* Hand back any papers
* Have the students take out their homework logs and fill in their homework for tonight
* When the students enter the classroom today have two problems on the board. They will complete the problems and then we will go over them
  + (5 \* 8) ÷ 10 – 4 = 40 ÷ 10 – 4 = 4 – 4 = 0
  + 18 + (2 \* 6 – 3) = 18 + (12 – 3) = 18 + 9 = 27
* (3 min)

Content Outline and Learning Activities:

* Have the students take out their homework from last night – PEMDAS homework. Have each student stand up and present their phrase/acronym..can help the other students see the order of operations with another explanation from their classmates. Then review the last section of the homework, map out using expression trees for each step. collect homework (10 min)
* Students will write two word problems (with Answers!) to submit to me. They can use their word problem help guide and other examples of word problems to give them ideas. I will give the students 10 min to create their problems. I will collect them when they are finished. Tonight I will type up the problems so that the students can solve each other’s problems in class tm. (10 min)
* Students will then learn about mean, median, and mode using m & m’s.
  + Handout worksheet on Mean, Median, and Mode
    - Read through definitions of mean, median, and mode.
  + Give out packets of M & M’s to the students. Each bag with 5 blue, 6 yellow, 3 red, and 8 brown.
    - Students will have to record the number of M & M’s, and then calculate the mean, median, and mode. We will go over this together after they make their observations.
    - Blue = 5
    - Yellow = 6
    - Red = 6
    - Brown = 8
    - Mean – find the average number of pieces of each color. Total number of M & M’s = 5 + 6 + 6 + 8 = 25. Divide by number of colors (4). So, 25/4 = 6.25. so, the average number of pieces of each color is 6.25.
    - Median – write how many of each color is ascending order. 3, 6, 6, 8. Middle number is (6 + 6) / 2 = 6. Median is 6.
    - Mode – most frequent number…6 because there are 6 reds and 6 yellow
  + Then, the students will take a handful of M & M’s, each student getting a different amount and they must calculate the mean, median, and mode of this distribution. Students will present their findings to the rest of the class.
  + (20 min)

Closure:

* Hand out homework for tonight. Order of Operations and Mean, Median, and Mode due 7/9/10
* Review the order of operations with the students. Have them explain the importance of using the order. (mathematicians came up with it so there is no confusion on which operation to use first. Set standards for solving expressions. This is the only right way to solve the expression)
* (2 min)

Evaluation Procedure:

* Homework due 7/9/10 – Order of Operations and Mean, Median, and Mode

Additional Notes:

* PEMDAS homework answers form 7/7/10
* Student word problems and answer key
* Mean, Median, and Mode worksheet
* M & M’s
* Order of Operations and Mean, Median, and Mode homework
* Order of Operations and Mean, Median, and Mode answer key

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Mean, Median, and Mode

1. The mean is also known as the average. Sum of the given elements divided by the total number of elements.
2. The median is the middle value of the elements written in ascending order (smallest to highest). If you have an even number of elements, the median is the average value of the two middle elements.
3. The mode is the most frequently occurring value out of all the elements.

Note: When finding the mean, median, and mode, a good place to start would be ordering the elements from smallest to largest.

M & M’s Activity!

Directions: find the mean, median, and mode for the amount of M & M’s given to you. Make sure you record how many blue, yellow, red, and brown M & M’s you have.

1. Blue:

Yellow:

Red:

Brown:

Mean:

Median:

Mode:

1. Blue:

Yellow:

Red:

Brown:

Mean:

Median:

Mode:

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Due Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

The Order of Operations and Mean, median, and mode homework

THERE ARE MORE PROBLEMS ON THE BACK!!

Directions: Solve the following expressions using the order of operations. SHOW ALL WORK!!!

1. (3 + 8 – 2 ) \* 5 =
2. 6 – 7 \* 32 =
3. 15 – 8 ÷ 4 \* 12 =
4. 32 ÷ 4 + (18 \* 3) =
5. 6 + (8 \* 4) ÷ 22 =

Directions: Use the information we learned today to calculate the mean, median, and mode of the following sets of numbers.

1. 1, 6, 2, 19, 5, 6, 3

Mean =

Median =

Mode =

1. 40, 11, 35, 7, 7

Mean =

Median =

Mode =

1. 5, 7, 9, 10, 10, 5, 3

Mean =

Median =

Mode =

Name: Answer Key

Due Date: 7/9/10

The Order of Operations and Mean, median, and mode homework

THERE ARE MORE PROBLEMS ON THE BACK!!

Directions: Solve the following expressions using the order of operations. SHOW ALL WORK!!!

1. (3 + 8 – 2 ) \* 5 =

(9) \* 5 = 45

1. 6 – 7 \* 32 =

6 – 7 \* 9 = 6 – 63 = -57

1. 15 – 8 ÷ 4 \* 12 =

15 – 2 \* 12 = 15 – 24 = -9

1. 32 ÷ 4 + (18 \* 3) =

32 ÷ 4 + (54) = 8 + 54 = 62

1. 6 + (8 \* 4) ÷ 22 =

6 + (32) ÷ 22 = 6 + 32 ÷ 4 = 6 + 8 = 14

Directions: Use the information we learned today to calculate the mean, median, and mode of the following sets of numbers.

1. 1, 6, 2, 19, 5, 6, 3

Rewrite in ascending order… 1, 2, 3, 5, 6, 6, 19

Mean =

1 + 2 + 3 + 5 + 6 + 6 + 19 = 42

42 / 7 = 6

Median = 5 (middle number)

Mode = 6 reoccurs the most

1. 40, 11, 35, 7, 7

Rewrite in ascending order.. 7, 7, 11, 35, 40

Mean =

7 + 7 + 11 + 35 + 40 = 100

100 / 5 = 20

Median = 11

Mode = 7 reoccurs twice

1. 5, 7, 9, 10, 10, 5, 3

Rewrite in ascending order.. 3, 5, 5, 7, 9, 10, 10

Mean =

3 + 5 + 5 + 7 + 9 + 10 + 10 = 49

49 / 7 = 7

Median = 7

Mode = 5 (twice), and 10 (twice) … both elements show up twice in the distribution

Name: Abby Simons Date: 7/9/10

Lesson Title: Word Problems and Review Unit Title: Week 3

Grade Level: 7th

Objectives:

* Students will be able to solve the word problems written by their classmates.
* Students will be able to recall integer operations, comparisons of integers, absolute value, and the order of operations.

Set Induction:

* Take attendance
* No homework! It’s Friday!!
* Review with students the terms mean, median, and mode. Ask for their definitions.
  + Mean = average. Sum of elements divided by the number of elements
  + Median = middle value in the elements when it is written in ascending order (smallest to largest)
  + Mode = most frequently occurring value out of all the elements.
* (3 min)

Content Outline and Learning Activities:

* Review homework from last night with the class – The Order of Operations and Mean, Median, and Mode
  + (10 min)
* Hand out worksheet with the students’ word problems that they created yesterday (7/8/10).
  + Students will answer the questions and hand them in to me.
  + (15 min)
* Math – Jeopardy Review Game.
  + Students will be on two teams.
  + All questions will be a review of the past three weeks of material.
  + The categories will be Integer Operations, Word Problems, Comparing Integers, PEMDAS, and absolute value.
  + I will create a poster with the categories on it and each number that will correspond to a question on a notecard to tell the student.
  + (17 min)

Closure:

* Finish up review game for rest of class

Evaluation Procedure:

* No homework it’s Friday!

Additional Notes:

* The Order of Operations and Mean, Median, and Mode homework answer key from 7/8/10
* Student Made Word Problem worksheet
* Student Made Word Problem worksheet answers
* Math – Jeopardy game poster board
* Math – Jeopardy game questions (questions will be written onto notecards)

Math – Jeopardy Questions and Answers

Integer Operations

1. 43 – 18 = 25
2. 25 \* 3 = 75
3. 6 – 19 = -13
4. 36 ÷ 4 = 9
5. 5 + (-3) = 2
6. 19 + 21 = 40
7. -8 – (-2) = -6
8. 3 \* 15 = 45

Word Problems

1. Sue is going to the grocery store on Friday and needs to buy a loaf of bread, one box of cookies, and a bag of grapes. If a loaf of bread costs $3, a box of cookies costs $2, and a bag of grapes costs $2, how much will she spend?

Answer… 3 + 2 + 1 = $6

1. Jon went rock climbing last weekend. He climbed up 8 feet and got scared and came back down to the ground. He then had enough courage to climb up another 12 feet. How high is Jon now?

Answer… 8 – 8 + 12 = 12 feet high

1. Mary wanted to give out candy to her friends at her birthday party. 15 of her friends came to her party. If she gave each person a bag of candy with 6 pieces of candy in each, how much candy did she give out?

15 \* 6 = 90 pieces of candy

Comparing Integers

1. 4 \_<\_ 18
2. -23 \_>\_ -50
3. 12 + 3 \_>\_ 6 – 2
4. 73 \* -1 \_<\_ 14 ÷ 2
5. 3 – 3 \_=\_ 0

PEMDAS

1. 32 ÷ 4 + 16 = 8 + 16 = 24
2. (3 – 5) \* 22 = (-2) \* 4 = -8
3. 36 – 18 ÷ 2 = 36 – 9 = 27
4. 15 ÷ 3 \* 42 – 18 = 15 ÷ 3 \* 16 – 18 = 5 \* 16 – 18 = 80 – 18 = 62
5. 3 \* 6 + 18 ÷ 3 = 18 + 6 = 24

Absolute Value

1. |-23| = 23
2. The opposite of |15| = -15
3. The opposite of |-3| = -3
4. |14| \_=\_ |-14|
5. -2 \_<\_ |18|